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## Patent claims

1. Spherical microparticles having an average diameter of 1 nm to 100  $\mu$ m, consisting wholly or partly of at least one water-insoluble linear polysaccharide.
2. Spherical microparticles having an average diameter of 1 nm to 100  $\mu$ m, consisting wholly or partly of at least one water-insoluble linear polysaccharide which has been prepared in a biotechnological process.
3. Spherical microparticles having an average diameter of 1 nm to 100  $\mu$ m as claimed in claim 2, consisting wholly or partly of at least one water-insoluble linear polysaccharide which has been prepared by a biocatalytic process.
4. Spherical microparticles having an average diameter of 1 nm to 100  $\mu$ m as claimed in claim 2, consisting wholly or partly of at least one water-insoluble linear polysaccharide which has been prepared by a fermentation process.
5. Spherical microparticles as claimed in claim 1, consisting wholly or partly of 1,4- $\alpha$ -D-polyglucan.
- 25 6. Microparticles as claimed in claim 5, wherein 1,4- $\alpha$ -D-polyglucan has been prepared by a biocatalytic process using polysaccharide synthases.
7. Microparticles as claimed in claim 5, wherein 1,4- $\alpha$ -D-polyglucan has been prepared by a biocatalytic process using starch synthases.
- 30 8. Microparticles as claimed in claim 5, wherein 1,4- $\alpha$ -D-polyglucan has been prepared by a biocatalytic process using glycosyl-transferases.
- 35 9. Microparticles as claimed in claim 5, wherein 1,4- $\alpha$ -D-polyglucan has been prepared by a biocatalytic process using  $\alpha$ -1,4-glucan transferases.

10. Microparticles as claimed in claim 5, wherein 1,4- $\alpha$ -D-polyglucan has been prepared by a biocatalytic process using glycogen synthases.  
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11. Microparticles as claimed in claim 5, wherein 1,4- $\alpha$ -D-polyglucan has been prepared by a biocatalytic process using amylosucrases.
12. Microparticles as claimed in claim 5, wherein 1,4- $\alpha$ -D-polyglucan  
10 has been prepared by a biocatalytic process using phosphorylases.
13. Microparticles as claimed in claim 1, wherein the linear polysaccharides have been prepared by enzymatic treatment of branched or highly branched polysaccharides.  
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14. Microparticles as claimed in at least one of claims 1 to 13 having an average diameter of 100 nm to 10  $\mu$ m, preferably 1 to 3  $\mu$ m.
15. Microparticles as claimed in at least one of claims 1 to 14, having a  
20 narrow distribution of particle diameters (dispersity).
16. Microparticles as claimed in claim 15, wherein the dispersity of the particle diameters  $d_w$  to  $d_n$  is 1.0 to 10.0, preferably 1.5 to 5.0, in particular 2.0 to 2.6.  
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17. Microparticles as claimed in at least one of claims 1 to 16, which additionally comprise one or more, preferably biodegradable polymers.
- 30 18. Microparticles as claimed in one or more of claims 1 to 17, which additionally comprise one or more active substances.
19. A process for preparing spherical microparticles which consist wholly or partly of water-insoluble linear polysaccharides, in particular 1,4- $\alpha$ -D-polyglucan, by dissolving the water-insoluble linear polysaccharide or the 1,4- $\alpha$ -D-polyglucan in a solvent, introducing the solution into a precipitant, cooling the mixture resulting therefrom, and removing the microparticles formed.  
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20. The process as claimed in claim 19, wherein solution and precipitant are mixed at temperatures from 20 to 50°C, and the mixture is cooled to temperatures from + 10 to - 10°C, preferably 5 to - 5°C.  
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21. The process as claimed in claim 19 or 20, wherein dimethyl sulfoxide is used as solvent.
22. The process as claimed in at least one of claims 19 to 21, wherein 10 water or an aqueous medium is used as precipitant.
23. The process as claimed in at least one of claims 19 to 22, wherein 15 the solution is prepared in the presence of one or more polymers, in particular biodegradable polymers, and/or of one or more active substances.
24. The use of the microparticles as claimed in at least one of claims 1 to 18 or of the microparticles prepared by a process as claimed in at least one of claims 19 to 23 for the controlled delivery of active 20 substances.
25. The use of the microparticles as claimed in at least one of claims 1 to 18 or of the microparticles prepared by a process as claimed in at least one of claims 19 to 23 as standard for determining the size of 25 particles.